

Data Owner 1:

Walker 31.07 xxx
Sophia 11.04 xxx
Clerk 11.12 xxx
Jana 21.11 xxx

Bloom Filter
based
encoding

10101 xxx
11001 xxx
01101 xxx
10010 xxx

Exchange
Encoding Secrets

Data Owner 2:

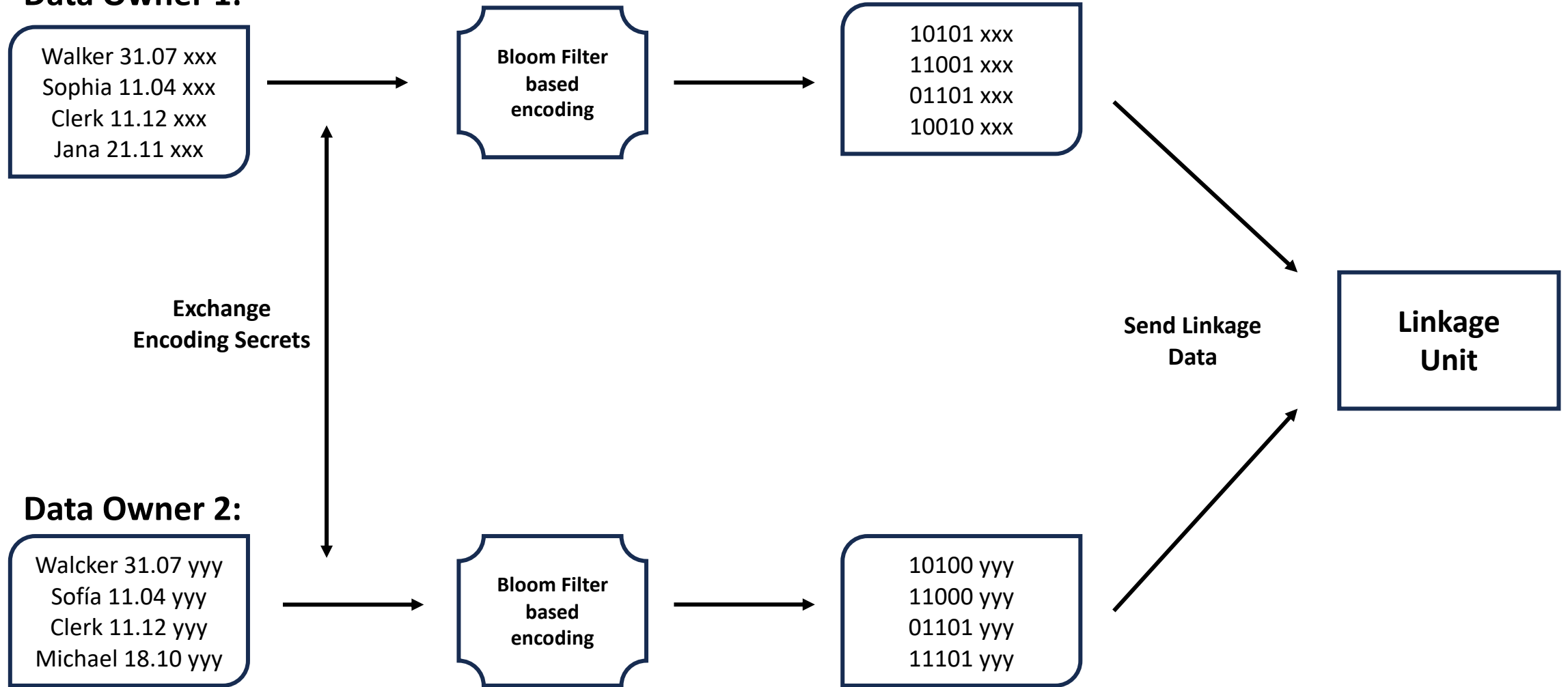
Walcker 31.07 yyy
Sofia 11.04 yyy
Clerk 11.12 yyy
Michael 18.10 yyy

Bloom Filter
based
encoding

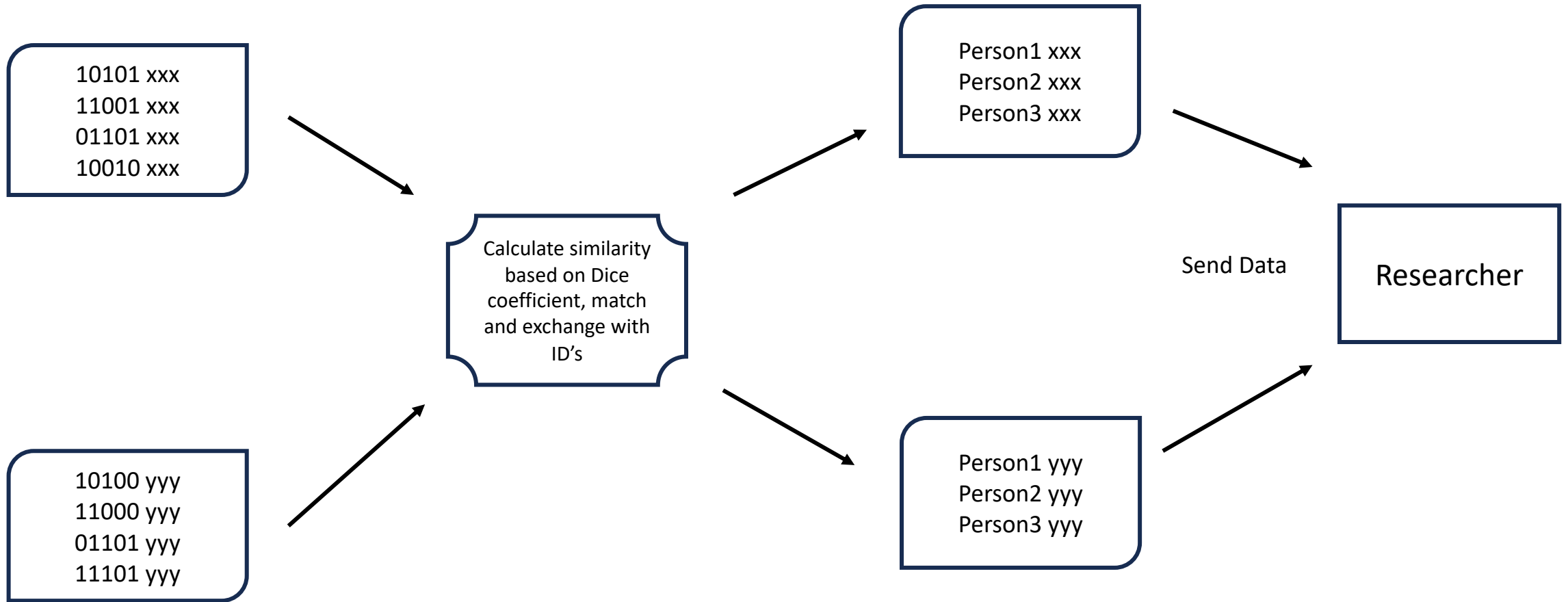
10100 yyy
11000 yyy
01101 yyy
11101 yyy

Send Linkage
Data

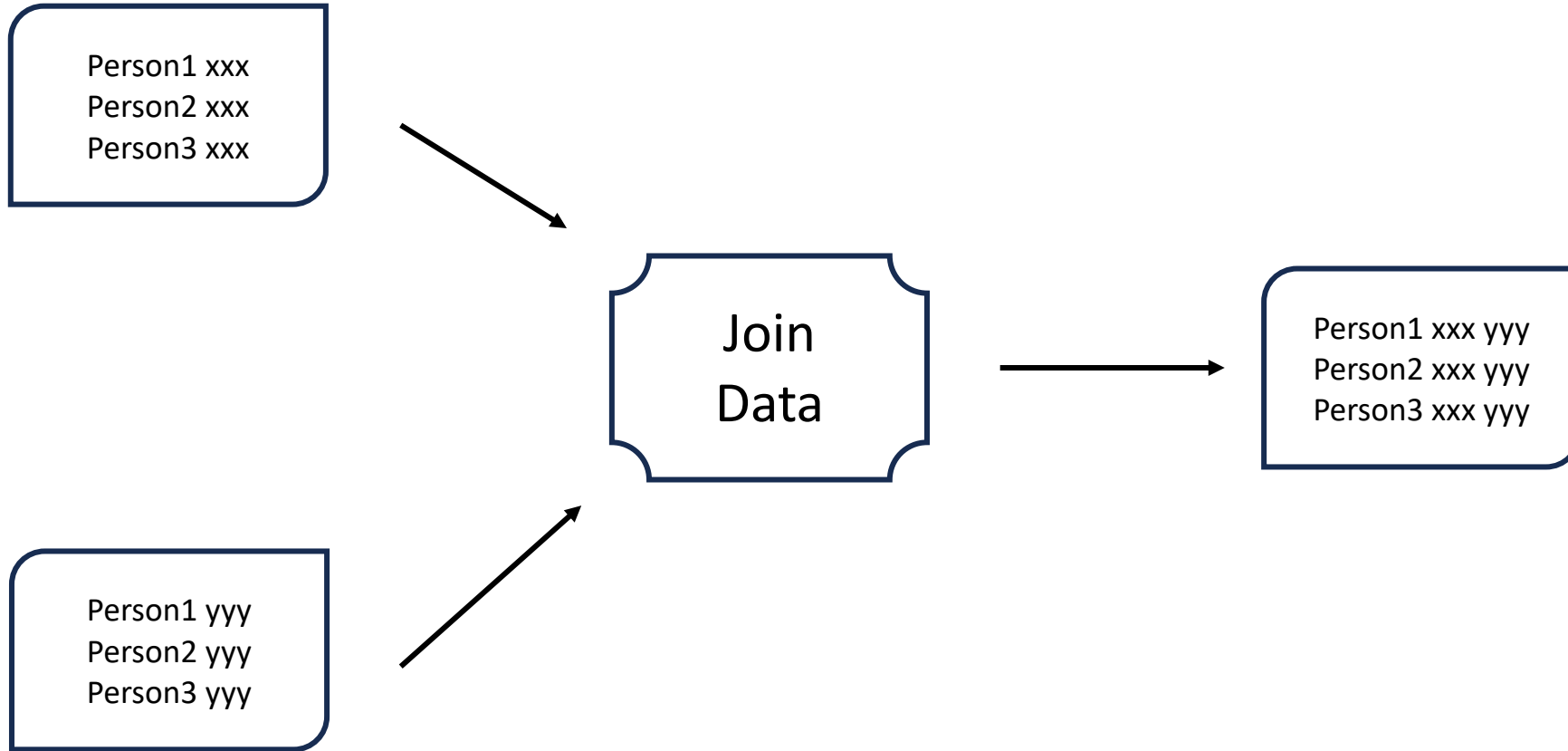
Linkage
Unit



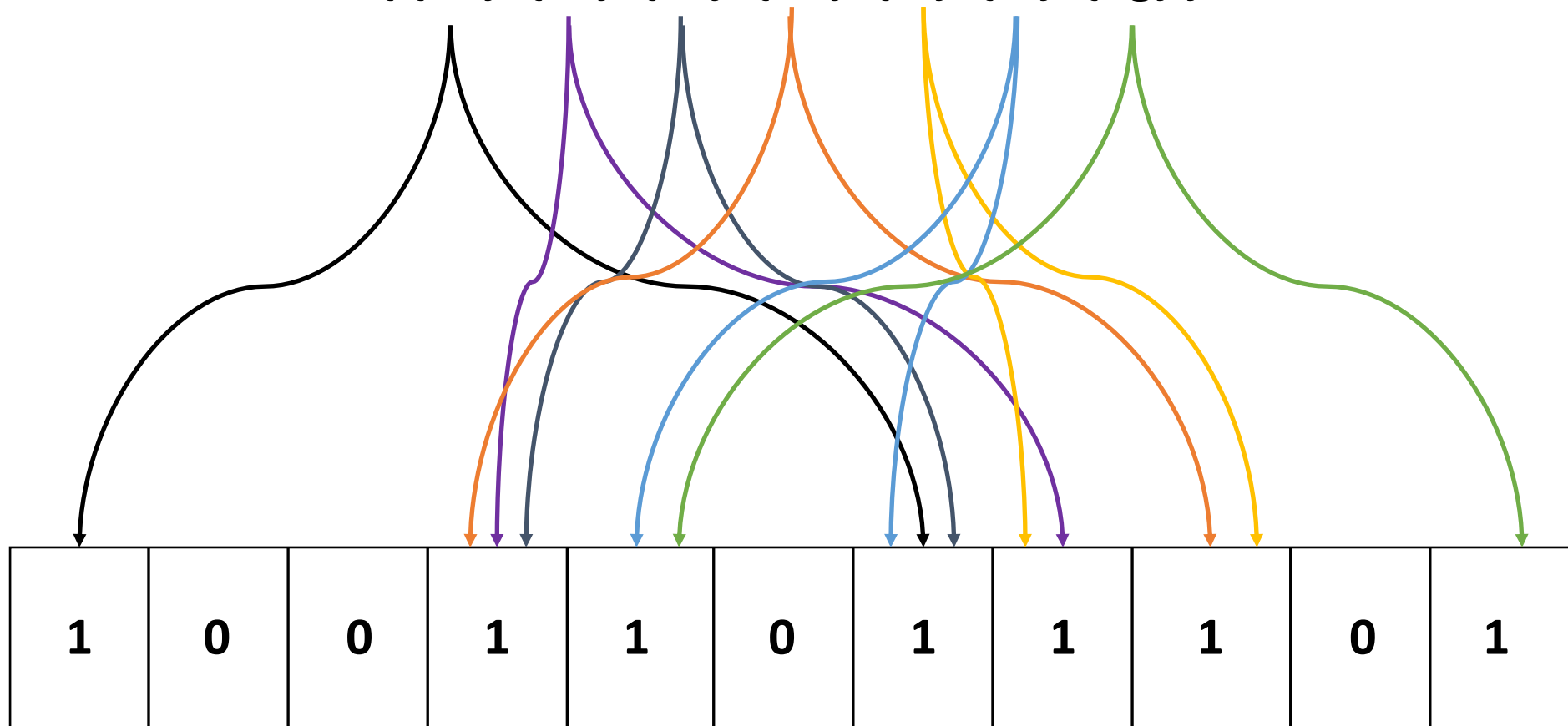
Linkage Unit:



Researcher:



{ {en}, {nc}, {co}, {od}, {di}, {in}, {ng} }



| Element | S | S' |
|---------|---|----|
| 1 | 1 | 1 |
| 2 | 0 | 1 |
| 3 | 1 | 1 |
| 4 | 1 | 0 |

π_1

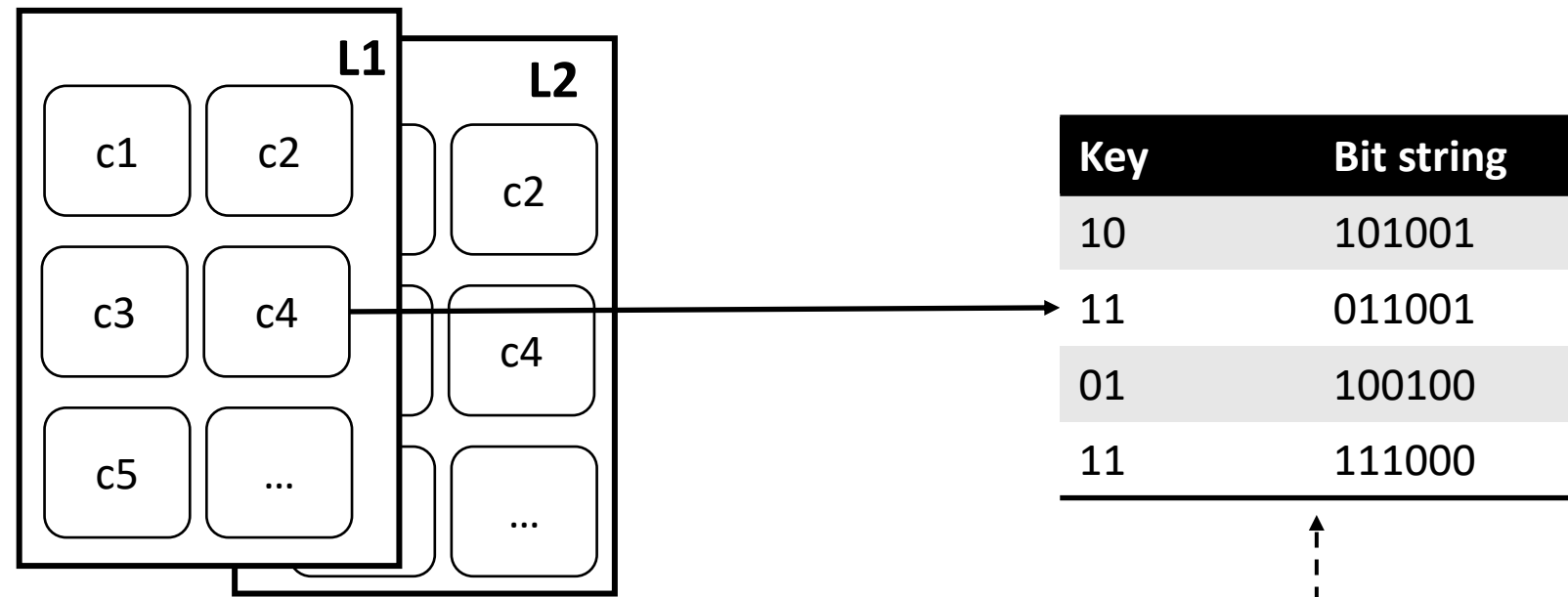
| Element | S | S' |
|---------|---|----|
| 4 | 1 | 0 |
| 3 | 1 | 1 |
| 2 | 0 | 1 |
| 1 | 1 | 1 |

π_2

| Element | S | S' |
|---------|---|----|
| 3 | 1 | 1 |
| 4 | 1 | 0 |
| 2 | 0 | 1 |
| 1 | 1 | 1 |

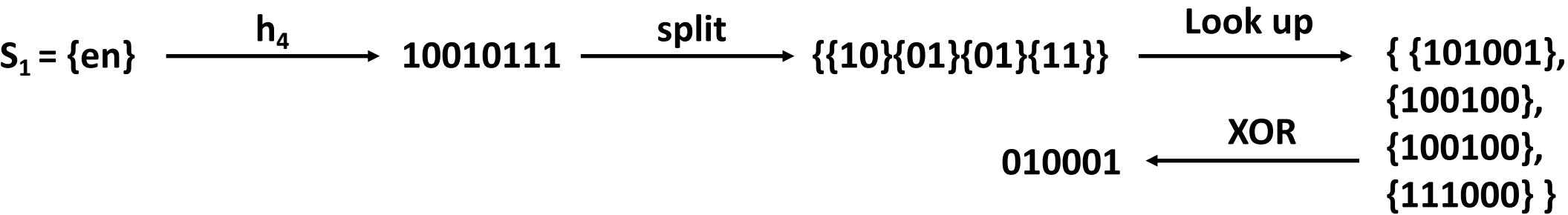
$$\begin{aligned}
 & [1(\pi_1(S_1)=\pi_1(S'_1)) + 1(\pi_2(S_1)=\pi_2(S'_1))] / 2 \\
 &= (1 * 0 + 1 * 1) / 2 \\
 &= 1/2
 \end{aligned}$$

Initialization



$S = \{ \{en\}, \{nc\}, \{co\}, \{od\}, \{di\}, \{in\}, \{ng\} \}$

Hasing Process



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01101 xxx
10010 xxx

Data Owner 2:

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Sofia 11.04 yyy
Clerk 11.12 yyy
Michael 18.10 yyy

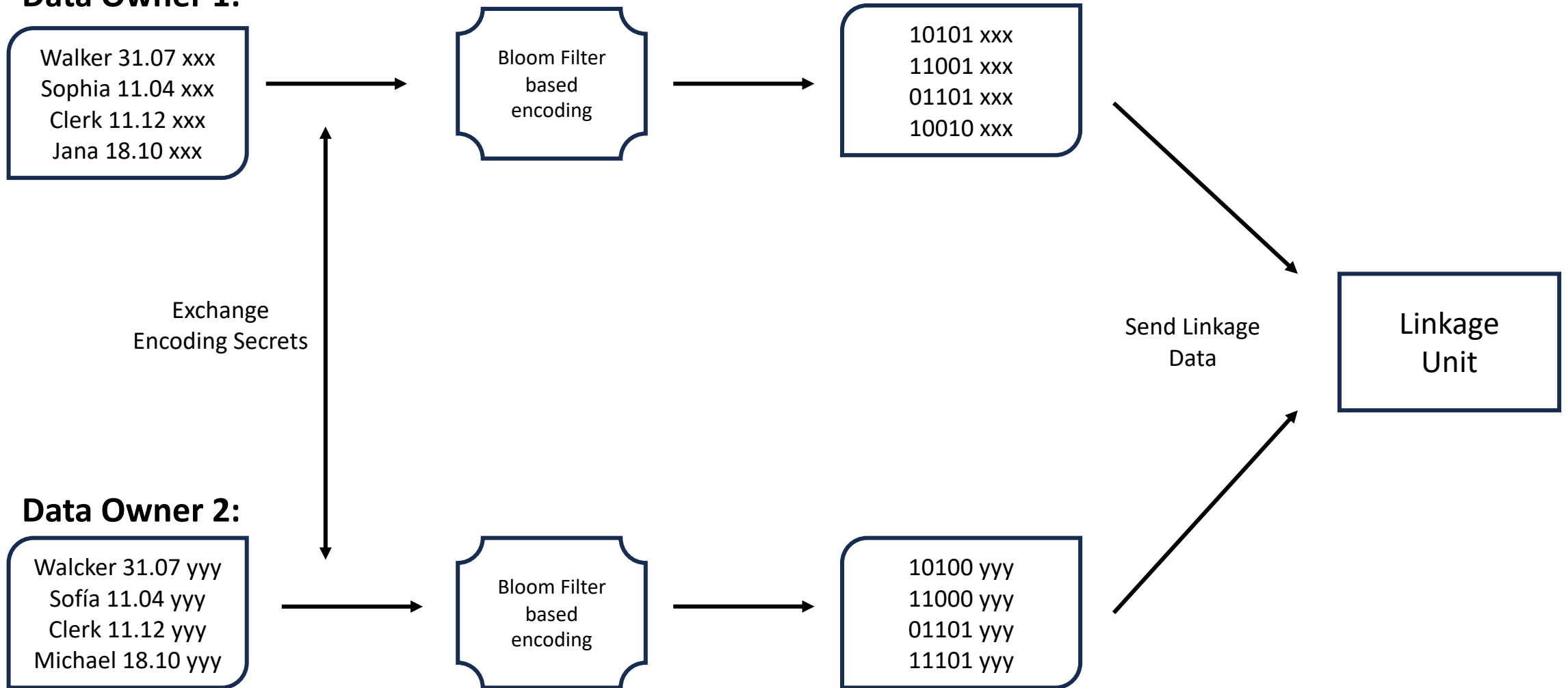
Bloom Filter
based
encoding

10100 yyy
11000 yyy
01101 yyy
11101 yyy

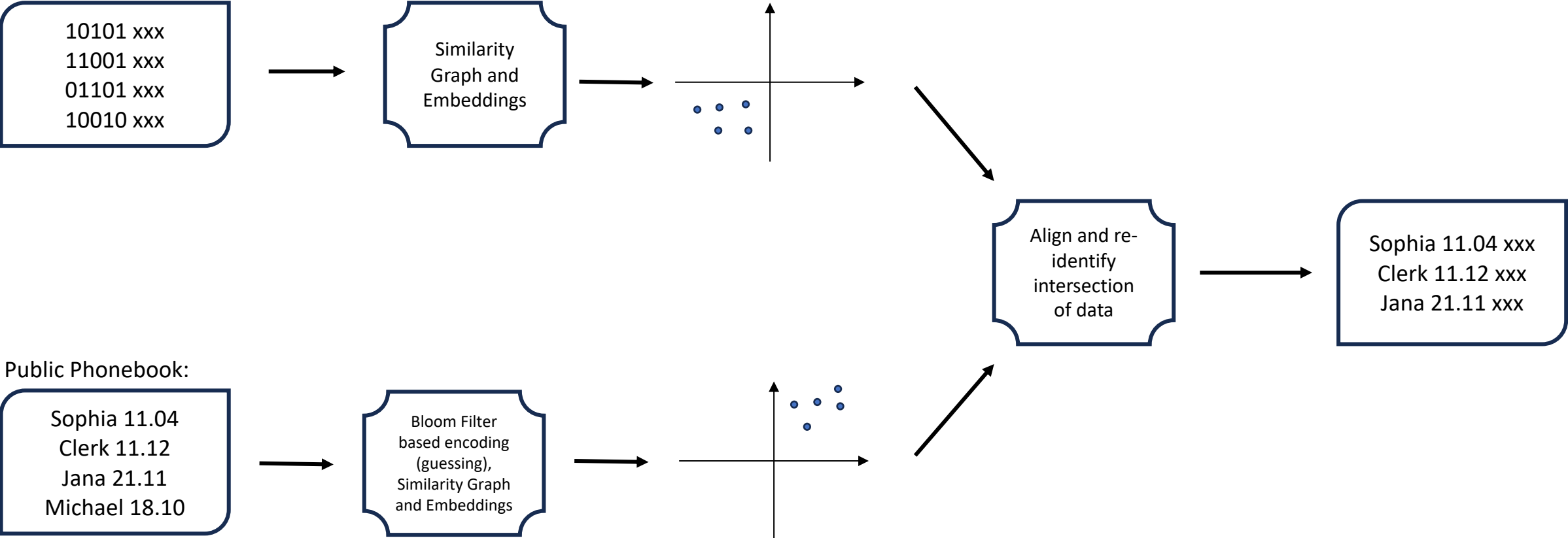
Linkage
Unit

Exchange
Encoding
Secrets

Send Linkage
Data



Linkage Unit:



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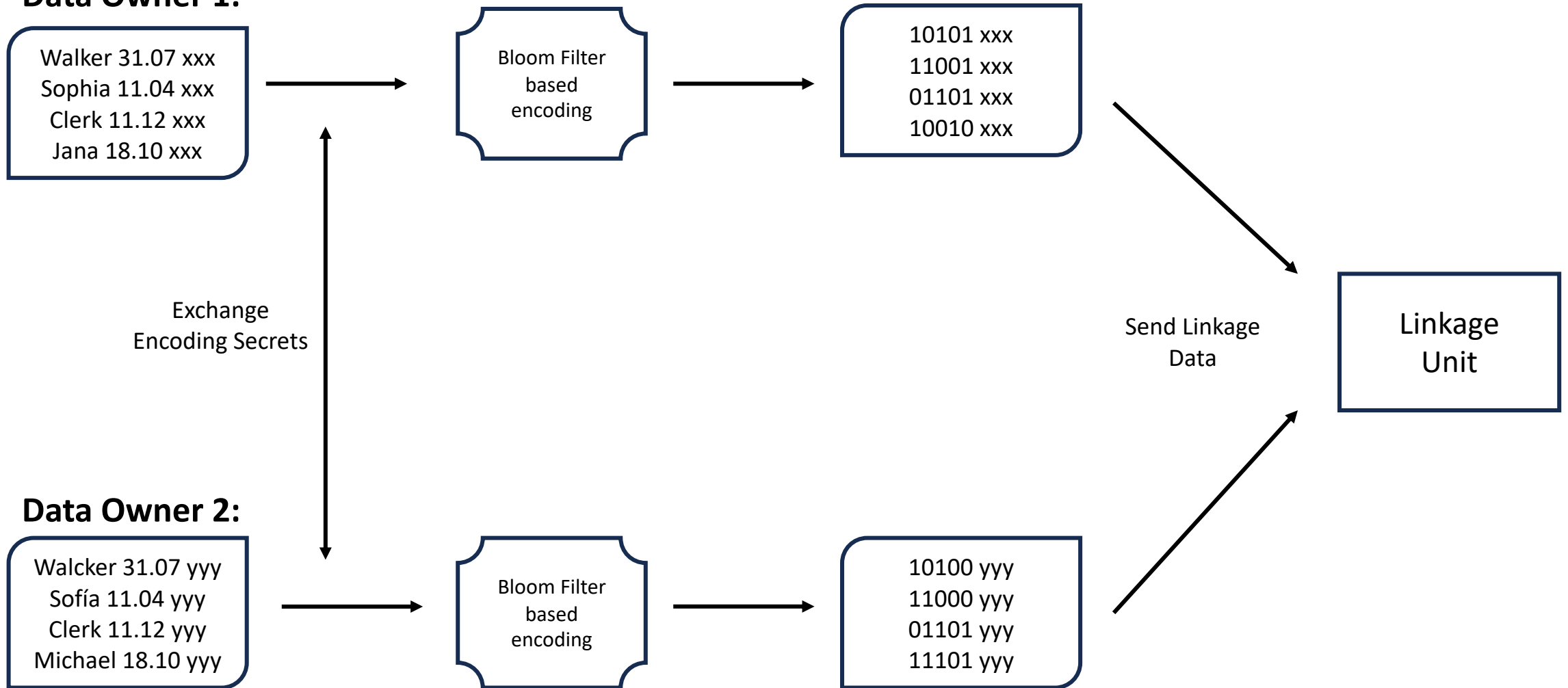
Bloom Filter
based
encoding

10100 yyy
11000 yyy
01101 yyy
11101 yyy

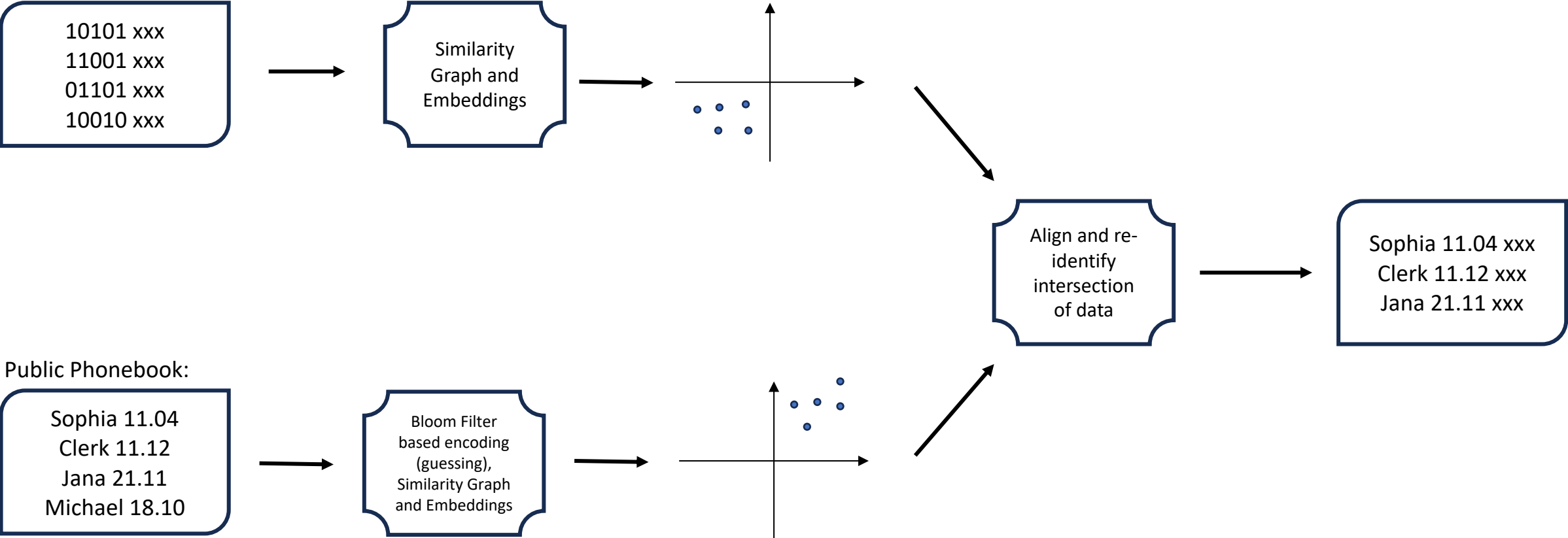
Linkage
Unit

Exchange
Encoding
Secrets

Send Linkage
Data



Linkage Unit:



Linkage Unit:

